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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/715,775	11/17/2000	Sun-Chueh Kao	2000U034.US	7030

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EXAMINER

LEE, RIP A

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 03/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/715,775

Applicant(s)

KAO ET AL.

Examiner

Rip A. Lee

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-33,37-47 and 50-55 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-33,37-47 and 50-55 is/are rejected.
- 7) ☒ Claim(s) 29,30,54 and 55 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This office action follows a response filed on November 13, 2003. Applicants have amended claims 23, 37, 40, and 51. In particular, claims 23 and 40 were amended to exclude use of tri-substituted aluminum compounds. New claims 54 and 55 were added.

Claim Objections

1. Claims 29 and 30 are objected to because of the following informalities: The claim recites "the component," and it is not clear whether this refers to the ionizing activator or the product of step (i). Appropriate correction is required.
2. Claims 34 and 48 are objected to because of the following informalities: These claims were canceled previously; their appearance in this amendment is a typographical error. Appropriate correction is required.
3. Claims 54 and 55 are objected to because of the following informalities: In the four occurrences where "tetra" precedes "pentafluorophenyl," replace the term with "tetrakis." Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 23-26, 28, 30, 33, 37, 39, 40-42, 44, 47, 51, and 53 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,834,393 to Jacobsen *et al.*

Example 17 of Jacobsen *et al.* shows a catalyst prepared by combining a metallocene with MAO supported on silica. In a subsequent step, the resulting product is combined with an ionizing activator of formula $(L'-H)_d^+ (A^d^-)$, and these are left in contact for 16 hours prior to contact with olefin (see also results in Table, col. 37). According to Example 2E, hydrocarbon solvent was used to make MAO/silica (col. 30, line 28). During the final assembly of the catalyst, the MAO/silica was suspended in toluene, and the metallocene was suspended in ISOPAR (see Example). Both solvents are hydrocarbon solvents. According to the inventors, the mole ratio of activator to transition metal is 0.5:1 to 20:1, and preferably, it is 1:1 to 5:1 (col. 17, line 61). Finally, the catalyst can be used in gas phase polymerization processes, as indicated in col. 23, line 35. In sum, the process of the present claims is fully disclosed in Jacobsen *et al.*

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6. Claims 23-26, 28, 30, 33, 37, 40-42, 44, 47, 51, 54, and 55 are rejected under 35 U.S.C. 102(a) as being anticipated by U.S. Patent No. 6,143,685 to Llinas *et al.*

Llinas *et al.* teaches a process for polymerizing olefins using catalyst component (A) and cocatalyst (B). Component (A) is prepared by combining an organoaluminum compound (A.2) with a functionalized support (A.1), followed by combining with a metallocene (A.3) (see claim 1). From the examples (*i.e.*, Example 6) it can be seen that the organoaluminum is MAO, and the support material is silica. Thus, MAO supported on silica is the result of combining (A.1) and (A.2). The first step is carried out in hydrocarbon solvent. In the second step, the MAO/silica is suspended in hydrocarbon solvent prior to addition of metallocene. The cocatalyst component (B) is selected from conventional ionizing activators such as *tris*(pentafluorophenyl)borane and dimethylanilinium *tetrakis*(pentafluorophenyl)borate (col. 9, lines 15-19). In this case, the mole ratio of boron to transition metal lies in the range of 0.5-10 (col. 9, line 51). In all instances, the catalyst components were allowed to stir for at least one hour upon combination (see examples).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 27, 29, 38, 43, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobsen *et al.* in view of U.S. Patent No. 5,674,795 to Wasserman *et al.*

The primary references recite use of hydrocarbon solvents in general, but do not teach use of diluents having a flash point greater than 200 °F, as recited in the present claims. However, it is noted that the catalyst in Jacobsen *et al.* is amenable to gas phase polymerization processes which require elevated temperatures. Wasserman *et al.* shows that Kaydol,[®] which is a mineral oil having a flash point greater than 200 °F, is well suited for gas phase polymerization reactions. The skilled artisan, having read both patents, would have found it obvious to use mineral oil as the solvent in the process shown in Jacobsen *et al.*, and since the solvent is inert, the skilled artisan would have expected such an embodiment to work without impairing catalyst activity.

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10. Claims 31, 32, 45, and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobsen *et al.* or Llinas *et al.* in view of U.S. Patent No. 6,066,703 to Reichle *et al.*

The primary references do not teach combining the catalyst with a cycloalkadiene compound. Reichle *et al.*, however, show that addition of cycloalkadienes such as cyclopentadiene, indene, fluorene and its derivatives (see Tables I-V, examples 1-48) to a catalyst composition is beneficial for enhancing catalyst activity. Therefore, one having skill in the art would have found it obvious to add cycloalkadienes of Reichle *et al.* to the catalyst Shamshoum *et al.* in order to arrive at the present claims. Since this process is shown to work in the prior art, one would expect the modified catalyst of Jacobsen *et al.* or of Llinas *et al.* to exhibit enhanced activity as well, thereby providing the requisite motivation for combining references. *In re O'Farrell*, 7 USPQ 2d 1673 (Fed. Cir. 1988).

11. The claim rejections under 35 U.S.C 102 (using references, Herrmann *et al.*, Wasserman *et al.*, and Shamshoum *et al.*) have been overcome by amendment. Accordingly, the rejection of claims under 35 U.S.C. 103(a) (Shamshoum *et al.* in view of Reichle *et al.*) has been withdrawn.

12. The prior art made of record but not relied upon is considered pertinent to the Applicant's disclosure. The following references have been cited to show the state of the art with respect to processes involving supported MAO catalysts.

U.S. Patent No. 6,696,379 to Carnahan *et al.*

U.S. Patent No. 5,863,853 to Vaughan *et al.*

U.S. Patent No. 5,856,255 to Krzystowczyk *et al.*

U.S. Patent No. 5,801,113 to Jejelowo *et al.*

U.S. Patent No. 5,723,705 to Herrmann *et al.*

Conclusion

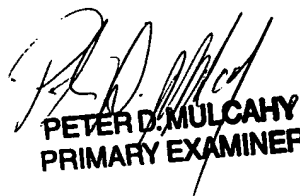
13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

ral

March 5, 2004


PETER D. MULCAHY
PRIMARY EXAMINER